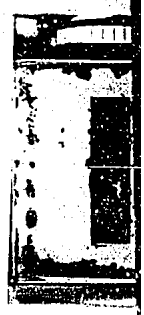
CLASSIFICATION RESTRICTED
SECURITY INFORMATION
CENTRAL INTELLIGENCE AGENCY

INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT
CD NO.

STAT



COUNTRY USSR

SUBJECT Scientific - Metallurgy, welding methods

HOW PUBLISHED Monthly periodical

WHERE PUBLISHED Moscow

DATE PUBLISHED Oct 1952

LANGUAGE Russian

DATE OF INFORMATION 1951 - 1952

DATE DIST. 26 Jan 1953

NO. OF PAGES 4

SUPPLEMENT TO REPORT NO.

THIS IS UNEVALUATED INFORMATION

SOURCE Avtogennoye delo, No 10, 1952, pp.30, 31.

ACTIVITY OF THE COMMITTEE ON AUTOMATIZATION AND HIGH-PRODUCTION METHODS OF WELDING, VNITOS

I. L. Brinberg
Candidate of Tech Sci
Chm of Committee

[Comment: The following report presents summaries of papers delivered at sessions of the Committee on Automatization and High-Production Methods of Welding, VNITOS (All-Union Scientific and Technical Society of Welders) in 1951 and the beginning of 1952.]

"Automatic Assembling and Welding Line for Automobile Wheels," S. V. Kutovoy, Orgavtoprom (State Trust for the Organization of Production in the Automobile Industry).

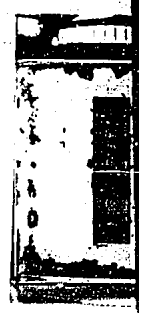
Automatization of fabrication procedure for automobile wheels was realized at the Gor'kiy Automobile Plant imeni Molotov, according to the author, for the first time in world practice. Details, as presented by him, are as follows:

Automatization is achieved by the following process: wheel bodies assembled in the press are delivered along an inclined roller bed into a storeroom, from which the distributing conveyer forwards them to four welding machines. Welded wheels are conveyed in succession to automatic machines which perform cleaning from slag, valve-hole punching and removal of burrs; then, wheels are subjected to visual inspection. The inspector, merely turning a control handle, directs inspected wheels either to main the conveyer or, in case of defects, to the repair shop.

The basic factor controlling the assembly line is the welding installation where all operations are entirely automatized. Delivery of the wheel and securing it in proper position, feed and removal of flux, arc striking, and welding and shifting of the wheel to the next position -- all these operations

CLASSIFICATION RESTRICTED

STATE	X	NAVY	X	NSRB		DISTRIBUTION						
ARMY	X	AIR	X	FBI								



are conducted without workman's interference. Automatic welding is performed at a rate of up to 150 m/hr, using current of about 1,000 a. By decreasing labor consumption to one third of that required for fabricating the wheel body by the ordinary method, the automatic assembly line released 30 workmen.

"Methods for Analysis and Classification of the Automatic Regulation Systems of the Arc-Welding Process," I. Ya. Rabinovich, Candidate Technical Sciences, Section of Electric Welding, Academy of Sciences USSR.

According to the author, application of static characteristics for performance analysis of the systems for automatic regulation of the welding process under static conditions is very descriptive and comparatively simple. This factor, he said, makes the given method adaptable for wide circles of engineers working in the field of automatic welding. The paper represents the most systematic investigation into analysis of the automatic regulation process.

"Types of Regulators for Electric Arc Welding, Their Technical Characteristics and Specifications," G. M. Kasprzhak, Section of Electric Welding, Academy of Sciences USSR.

The author presented his considerations on the following subjects: general characteristics of works on the theory of automatic regulation of the process of arc welding; structural classification of the automatic regulation systems of the arc-welding process, their technical characteristics and specifications for designing these systems.

"Application of Protective Pastes in Automatic Welding," A. G. Mayzel', Candidates of Technical Sciences, NIIStroyneft' (Scientific Research Institute of Construction in the Petroleum Industry).

The author said that automatization of the process of welding low-carbon steel with an open arc is one of the most essential problems of contemporary welding technique. He added that development of such a welding process, which provides for high mechanical properties of the weld and productivity specific to welding under flux, and secures at the same time the maneuverability of welding with open arc, would considerably increase the extent of welding automatization in a number of industries.

The paper deals with the technology of automatic welding using metal electrode with protective pastes. Encouraging results were obtained after numerous experiments conducted at NIIStroyneft'.

"Continuous Action Mill for Automatic Welding of Pipes by the Method of the Spiral Seam," P. G. Rybalka, TsNIITMASh (Central Scientific Research Institute of Technology and Machine Building).

This paper stated that the major advantage of welded pipes is the uniformity of their wall thickness as a result of using rolled metal for their fabrication. Seamless pipes, it was added, having variations in wall thickness, require a higher safety factor and therefore are heavier than welded pipes of similar inside diameter.

The author continued as follows: TsNIITMASh conducted a number of works in connection with the process of welding pipes along a spiral seam. The steel skelp, fed at an acute angle to the cylindrical mandrel, is wrapped around it by special devices which press the strip to the mandrel surface and, winding along the spiral, forms a pipe. Adjoining edges of the skelp are joined under flux with a double-layer weld, executed by two automatic welding heads installed with the spiral pitch distance between them. Formation of the seam inside the pipe is done on the flux pad with the endless screw device.

Continuity of operation is achieved by joining the ends of the coiled strip by a special automatic welding machine and by automatic cutting of finished pipes by the electric arc under flux.

"Application of Metal Powders in the Process of Automatic Welding Under Flux," S. Ye. Sinadskiy, TsNIITMASh.

A summary of this paper is as follows: Ratio between molten filler and melted base metal is, in the majority of cases, the most essential characteristic of the process of automatic welding under flux. The author developed a method for regulating this ratio by addition of metallic powder into flux. The method permits an increase in the share of added metal in a weld, thus decreasing the fusing depth of the base metal. This arrangement is very important in many cases of welding. Simultaneously, the productivity of the process increases as a result of increase of the building-up coefficient. The method is incorporated into the production of thin-walled welded pipes for heat exchange equipment.

"Automatic Welding With the Carbon Electrode Under Flux," N. A. Ol'shanskiy, Candidate of Technical Services.

A summary of this paper follows: The process was developed by the author at the Moscow Higher Technical School (MVTU) under the supervision of Professor G. A. Nikolayev, Doctor of Technical Sciences. It may be used not only in application to steel and copper but also for joining steel with brass. The welding head, designed for using a carbon electrode, is simple and may be fabricated at the majority of machine-building plants. The electric equipment has no significant differences from the equipment of welding installations with metal electrodes. Therefore, introduction of the method into production represents no considerable difficulties. The author also investigated the resistance of flux depending on welding parameters.

"Regulation of the Melting of Base and Filler Metals in the Process of Two-Electrode Three-Phase Automatic Welding Under Flux," K. I. Timofeyev, Section of Electric Welding, Academy of Sciences USSR.

The investigator constructed a topographical chart of the three-phase system for determination of phase currents. He also established relationships among position of electrodes, the rate of their feed, welding conditions, and the ratio between filler and base metal in the weld. He found that the amount of the base metal may be regulated in the range from 0 to 60-70%. He said that the welding factor of an electrode rod is 20-25 g/a-hr at current density about 60 a/sq mm, and that this provides for a filler-metal melting rate of 30-35 kg/hr with 700-800 a current in electrodes.

"Activity of TsNIITMASh in the Field of Automatic Welding With Three-Phase Arc," I. L. Brinberg, Candidate of Technical Sciences.

The findings presented by the author are as follows: A complex of projects of the Welding Division of TsNIITMASh on automatic welding with three-phase arc was connected with the problem of fabricating especially thick-walled containers. Equipment, fluxes, and procedure were developed for welding steel up to 135 mm in thickness, securing mechanical properties of the weld similar to those of the base metal, type 15 M molybdenum steel.

The process of automatic welding with three-phase arc doubles the productive capacity of welding equipment and decreases electric power consumption by 30% in comparison with single-phase arc welding.

"Hard Surfacing by Automatic Welding With a Tubular Electrode Under Flux," B. N. Panov, Section of Electric Welding, Academy of Sciences USSR.

The following is a summary of the author's report: Despite the fact that the hard-surfacing method is used on a large scale, automatization of its operations is still in the initial stage due to the great variety of surfacing works and diverse conditions for their realization.

The Section of Electric Welding designed an automatic machine for surfacing with various alloys welded under flux on the base metal. To obtain a surface of given chemical composition, a tubular electrode is used. A mixture of the proper components is fed from the hopper on to a thin steel strip, which is then rolled up by the automatic welder into a tubular electrode.

- E N D -